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ABSTRACT

This book is the fourth in a series aiming to promote international exchange of ideas, experiences, and studies relating to technical and vocational education. The introduction reviews traditional practices in assessment and chapter 2 highlights the connections between assessment and learning, emphasizing that assessment is the most significant prompt for learning. Chapter 3 addresses the need to focus on competence, and describes a competency-based framework of assessment that assumes educational standards can be set, most students can achieve them, different performances can reflect the same standards, and assessors can judge these performances. The chapter suggests use of such a model affects the approach to both training and assessment that is currently being implemented in vocational education in many countries. Chapter 4 highlights recognition of prior learning, recommending that vocational education providers should take account of prior learning because it is sound educational practice; students may be able to progress more quickly, and they are not forced to "learn" things they already know. Chapter 5 considers the use many countries make of external assessment systems for their technical and vocational courses. Chapters 2-5 each contain an annotated list of further readings. (YLB)

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UNEVOC Studies in Technical and Vocational Education ◆ 4

ED 398 456

New Perspectives on Assessment

Rod McDonald
David Boud
John Francis
Andrew Gonczi

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International Project on Technical and Vocational Education

New Perspectives on Assessment

Rod McDonald
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Section for Technical and Vocational Education

UNESCO, Paris

3

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PREFACE

This publication is the fourth in the series entitled "Studies in Technical and Vocational Education" distributed by the Section for Technical and Vocational Education, UNESCO within the framework of UNEVOC Project. UNEVOC is the acronym of UNESCO's International Project on Technical and Vocational Education, which was launched in 1992. This project focuses primarily on the exchange of information, networking and other methods of international co-operation between specialists in technical and vocational education.

This study has been prepared by a team of experts led by Dr. Rod McDonald of the University of Technology, Sydney, under contract with UNESCO. With their extensive experience, the authors present current theory and practices in assessment which is one of the most important processes in technical and vocational education. We are certain that the readers of this publication will find it very useful.

The views expressed in this paper are those of the author and do not necessarily reflect those of UNESCO. The designations employed and the presentation of the material do not imply the expression of any opinion whatsoever on the part of the UNESCO Secretariat concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.

TABLE OF CONTENTS

1. INTRODUCTION 7

1.1 Why this book is needed 7

1.2 Traditional practices in assessment 8

2. ASSESSMENT, TEACHING AND LEARNING 10

2.1 Assessment and learning 10

2.2 The purposes of assessment 11

2.3 The importance of self-assessment 12

2.4 Feedback to students 13

2.5 The need for trained assessors 13

2.6 Further reading 14

3. ASSESSMENT OF COMPETENCE 16

3.1 Why competency-based assessment? 17

3.2 How much evidence? 17

3.3 Principles of competency-based assessment 19

3.4 Steps in developing a competency-based assessment strategy—a case study 23

3.5 Further reading 25

4. RECOGNITION OF PRIOR LEARNING 26

4.1 Why should assessment take account of prior learning? 26

4.2 Issues in connection with prior learning 26

4.3 Methods in use 27

4.4 The RPL process 32

4.5 Further reading 32

5. ASSESSMENT ACROSS MANY INSTITUTIONS 34

5.1 Learning, competence and recognition 34

5.2 Goals and policies 35

5.3 The administration of external examinations —a case study 37

5.4 General issues 41

5.5 Further reading 43

REFERENCES 45

The authors

Rod McDonald is Professor of Adult Education at the University of Technology, Sydney. He is involved in many research and development projects in technical and vocational education, particularly focussing on costing issues and the recognition of prior learning, and has contributed to national policy development in these areas.

David Boud is also Professor of Adult Education at the University of Technology, Sydney. His particular interest is the interaction between assessment and learning, and he is currently completing a book on self-assessment.

John Francis is Director of Testing and Training Services at The Associated Examining Board, Guildford, England, with a responsibility for test development, training services and consultancy. His background is in educational research and, measurement and commercial test development.

Andrew Gonczi is Head of the School of Adult Education at the University of Technology, Sydney. He has been responsible for the development of new approaches to the development and implementation of competency standards in the professions.

SUMMARY

Assessment is perhaps the most vital of all the processes in vocational education. With a high-quality assessment system, students can be confident in the quality of their training and employers can have confidence in qualified students. Without them, however, either of these can be placed in jeopardy.

Many assessment practices remain as valid today as they have ever been. However, new challenges have arisen in this field which traditional approaches to assessment are failing to address. The following four issues are highlighted in this book:

The connections between assessment and learning

Assessment is the most significant prompt for learning. Every act of assessment gives a message to students about what they should be learning and how they should go about it, and assessment tasks need to be constructed with that in mind.

The need to focus on competence

Under a competency-based assessment system, assessors make judgments, based on evidence gathered from a variety of sources, about whether an individual meets a standard or a set of criteria. A competency-based framework assumes that educational standards can be set, most students can achieve them, different performances can reflect the same standards, and assessors can judge these performances consistently. The use of such a model affects the approach to both training and assessment which is currently being implemented in vocational education in many countries.

Recognising competence attained outside formal learning situations

Recognition of Prior Learning is a process to accredit learning gained or skills acquired outside formal educational institutions. It is usually carried out by assessing what a person has learnt, or can do, against the standards required by the relevant course. Vocational education providers should take account of prior learning because it is sound educational practice: students may be able to progress more quickly, and they will not be forced to "learn" things they already know.

Assessing across many institutions

Many countries make use of external assessment systems for their technical and vocational courses. Assessment within such systems will generally be carried out by an external board, designed to provide valid and reliable, high-quality public examinations, tests and related services at low cost to educational, training, industrial and commercial organisations within their national jurisdiction.

1. INTRODUCTION

Assessment is perhaps the most vital of all the processes in vocational education. A high-quality assessment system provides the right emphasis on the different aspects of a course, gives students appropriate feedback, ensures that the right students are deemed to have learnt sufficient, and results in a qualification that is well understood. With the right procedures in place, students can be confident in the quality of their training, and employers can have confidence in qualified students. Without them, however, any of these can be placed in jeopardy.

1.1 Why this book is needed

Many assessment practices remain as valid today as they have ever been, and there is no shortage of information available on assessment: there are numerous general books written on assessment, and many manuals and materials which apply these ideas to situations in vocational education.

However, new challenges have arisen in this field which traditional approaches to assessment are failing to address. There is also an increasing amount of research and development being carried out in the area. The purpose of this book is not to repeat what is readily available elsewhere, nor to overturn much of what has been written. It is to bring new ideas on assessment to the attention of practitioners, administrators, and to those with responsibilities for setting policy. The issues highlighted in this book are:

- the connections between assessment and learning
- the need to focus on competence
- recognising competence attained outside formal learning situations
- assessing across many institutions.

The importance of assessment issues in vocational education is often not appreciated. There is, for example, probably more bad practice and ignorance of significant issues in the area of assessment than in any other

aspect of vocational education. This would not be so bad but for the fact that the effects of bad practice are far more potent here than for any aspect of teaching. Students can, with difficulty, escape from the effects of poor teaching; they cannot (if they want to succeed in a course) escape the effects of poor assessment. Assessment acts as a mechanism to control students that has more effect on students than most teachers or administrators are prepared to acknowledge.

The level of concern and debate about assessment is summarised by Eckstein and Noah (1993):

> "If examinations provoke debate and conflict, it is because they are not merely technical devices to evaluate students. The policies and practices they embody carry ideological and political freight. Educational, ideological and political issues become intertwined, especially over questions of control, who shall control the examinations, and what shall the examinations control?
>
> Neither of these questions finds permanent solutions in any country. Instead, current examination policies and arrangements are best regarded as the outcome of a series of compromises among competing values, interests, and points of view, or ... as a set of trade-offs between competing values."

That is to say, assessment is important in its own right—it cannot be separated from the social context, and it also aids or inhibits the attempts of vocational educators to improve teaching and learning. It is for these reasons that a book focussing on current assessment issues is needed.

1.2 Traditional practices in assessment

The priority in assessment in the past—whether in the classroom or in large-scale public examinations—has been for forms which compared individuals with each other. In vocational education, however, assessment needs to be thought of not as a comparison between individuals, but as "the process of collecting evidence and making judgments on the extent and nature of progress towards the performance requirements set out in a standard, or a learning outcome" (Hagar,

Athanasou and Gonczi 1994). Despite frequent claims, this has rarely been the case.

Particular problems have been:

- assessment of students on those matters which it is easy to assess, leading to an over-emphasis on memory and lower-level skills
- assessment encouraging students to focus on those topics which are assessed at the expense of those which are not
- students giving precedence to graded assessment tasks over those which are ungraded
- students adopting undesirable approaches to learning influenced by the nature of assessment tasks
- students retaining fundamental misconceptions about key concepts in the subjects they have passed, despite performing well in examinations
- successful students seeking cues from teachers to enable them to identify what is important for formal assessment purposes, and consequently ignoring important but unassessed material.

As a result, existing assessment approaches can have quite the opposite effects to those desired. Fortunately, the issue of the links between competence, learning and assessment has now come to prominence, and it is possible to look afresh at ways in which assessment can fulfil two necessary requirements: that it measures competence, and that it has a beneficial effect on the learning process.

2. ASSESSMENT, TEACHING AND LEARNING

2.1 Assessment and learning

Assessment is the most significant prompt for lear- ing: every act of assessment gives a message to students about what they should be learning and how they should go about it. The message is often not explicit, is not easily understood and often it is read differently and is often given a different emphasis by teachers and by students.

Good assessment is not just a matter of finding the "appropriate" method and using it sensibly in conjunction with given subject matter. There are always unintended consequences in assessment. Students will learn to adopt "surface" approaches (such as those relying on memorisation) to study in some circumstances, and will adopt "deep" (meaning-seeking) approaches in others. In so doing, they will be prompted partly by the forms and nature of assessment tasks. They will learn that, in order to maximise their marks, they should use rote learning in many circumstances, even when the teacher might believe that this would distract them from the most important aspects of the course. This response—and other undesirable ones—will be a function not only of the assessment tasks set, but also of all the experiences of assessment students have had in the past. If, for example, they get the idea that memorisation works for multiple-choice tests, they will persist in that strategy even when assured that it will not help. Students are not simply responding to the given subject—they carry with them the totality of their experiences of learning and being assessed and this certainly extends far beyond concurrent and immediately preceding subjects.

All of this means that the way a student approaches the task of learning will depend on:

- the intrinsic qualities of the form of assessment being used;

- the ways in which the assessor translates the material to be assessed into the given format, and selects assessment tasks appropriate for the subject and the specific learning goals; and
- (most importantly) how the student *interprets* the task at hand and the context of the assessment.

The latter interpretation does not only depend on the form of the assessment process, but on how these tasks are embedded within the total context of the subject and within the total experience of the course and of the student's life. For instance, assessment tasks are set by experienced, often well educated, professional educators with a deep subject knowledge, for inexperienced learners who are often from a different generation and possibly a different culture. These major differences must inevitably affect the interpretation of any assessed tasks.

Students also experience the interaction effects of one form of assessment on another. In one month they may have to complete ten assessment tasks, in another month only one. The ways in which they approach each of these will be influenced by the others. A task which is intrinsically interesting and which may be approached meaningfully at any other time may be given short shrift when it is located among a thicket of assessments. Very little attention has been given to the compounding effects of assessment, even when teachers know that it is the total array of demands in a given period which influences how each one is tackled.

2.2 The purposes of assessment

Assessment may be "formative" or "summative". The purpose of formative assessment is to provide feedback to students, as part of the learning process. Summative assessment, on the other hand, refers to actions such as marking or grading, in which the focus is on making a judgment on a student's work. It is not, however, possible to separate the two cleanly, as the dominance of summative assessment in the minds of students (and in the practices of teachers) has been so great that it tends

to swamp the more modest endeavours of formative assessment. Too often assessment is led by the needs of summative judgment, not learning, and turns out to be more about measurement and record-keeping than about communication and portrayal of competence. Ironically, it often fails to serve even the needs of the former very well.

It is important to find ways to consider both aspects together at all times, rather than attempting to separate them artificially.

2.3 The importance of self-assessment

An issue that has not received enough attention is how to best use the capacities and skills of students to assess themselves. This is of greater long-term significance than the effect of any specific subject-matter learning. Students must leave a vocational education course equipped to engage in self-assessment throughout their professional lives. They need to be able to make reliable judgments about what they know and do not know, and what they can and cannot do. Too often staff-driven assessment encourages students to be dependent on the teacher or the examiners to make decisions about what they know, and they do not effectively learn to do this for themselves.

At present, students learn most about self-assessment through their own informal second-guessing of their performance on the assessment tasks which are set, but this is rarely adequate. A variety of ways of giving practice to students in self-assessment is required. In particular, self-assessment activities—in which students learn to distinguish acceptable from unacceptable performance—need to be developed, and self-assessment actively encouraged.

A starting-point for doing this (adapted from Boud 1992) is:

- clarifying the concept of criteria in terms with which the students are familiar—for example, by asking "how would you distinguish good work from poor work in this subject?"

- spelling out the criteria in sufficient detail to make it possible for each student to make a judgment on the extent to which the criteria have been met. The criteria need to specify
  - — the area to be assessed
  - — the aims of the assessed work
  - — the standards to be reached.

Strategies then need to be put in place to assist the self-assessment process. The two most common are the use of written schedules, and structured group activities. Both of these are explained in Boud (1992).

2.4 Feedback to students

Feedback plays an important role in the learning that students undergo. Even in a competency-based systems, the quality and nature of assessment at intermediate steps is vital. As the focus is on achieving a standard outcome, the importance of the learning process is often played down. The significance of well-constructed feedback is an important part of this.

Too often, however, the distinction is not made clear between giving feedback on a particular piece of work, or demonstration of skill on the one hand, and judging them as a person. Comments are made to students which can easily be taken as a personal comment rather than as a comment on their work.

2.5 The need for trained assessors

The comment above about feedback to students exemplifies the skills that those in vocational education need to have if they are to be effective assessors, as the importance of assessment to learning is increasingly recognised. Traditionally, vocational teachers have tended to emphasise their teaching rather than their assessing role. With the increased emphasis on the importance of outcomes from vocational education, teachers will need additional training in assessment. The following areas

of expertise (taken from CSB 1994) might be expected for anyone assessing in vocational education:

Areas of expertise for assessors in a competency-based system

- establishing what evidence is required then organising assessment
- collecting evidence
- making the assessment decision (by drawing inferences by comparing evidence with required learning outcomes)
- recording the results
- reviewing procedures.

2.6 Further reading

Rowntree, D (1989) *Assessing students: how shall we know them?* (Second edition, revised.) London: Kogan Page

> This book covers the underlying issues of assessment in a way that is very accessible to practitioners. It discusses the purposes of assessment, its side-effects, and the issues of what to assess, how to assess, and how to interpret the results of assessment.

Boud, D (1992) *Implementing student self-assessment.* (HERDSA Green Guide no. 5). 2nd edition. Sydney, Australia: Higher Education Research and Development Society of Australasia.

> A practical guide on how self-assessment can be used in teaching and assessment, including a number of case-studies.

CSB (1994) *Workplace Assessor Competency Standards.* Canberra, Australia: Assessor and Workplace Trainer Competency Standards Body.

This document is a set of competency standards for assessors, which also includes a discussion of validity, reliability, flexibility and fairness (discussed later in this book). Although intended as a guide for those training or accrediting assessors, it is also useful to clarify the roles of those with responsibility for assessment.

Eisner, E W (1993) Reshaping assessment in education: some criteria in search of practice. *Journal of Curriculum Studies* 25 (3) 219-233.

This paper discusses the need to move away from some of the test-driven and general assessments of the past.

3. ASSESSMENT OF COMPETENCE

Traditional approaches to assessment have assumed that intelligence (like other traits such as height) is distributed in a regular fashion represented by the normal curve. This assumption underpins much of the way in which people have thought about assessment, and the generation of such measures as percentile ranks.

Tests based on these assumptions seek to differentiate between individuals—that is, to find out where individuals fit in this distribution represented by the normal curve. Thus questions or items are selected in this measurement model of assessment on the basis of how well they discriminate between people. That is, excellence is determined by how well individuals perform relative to others. If all candidates performed well in the test, its constructors would assume it was a bad test—not that all the students performed excellently.

Assumptions of the standards-based model are quite different. They are that educational standards can be set, most students can achieve them, different performances can reflect the same standards, and assessors can judge these performances consistently. The use of such a model affects the approach to both training and assessment which is currently being implemented in vocational education in many countries Courses are designed and delivery undertaken to achieve the specified standards, and assessment is based on these standards.

Tests based on this model are informed by public standards and seek to measure students' understanding of the processes and concepts that underpin performance in authentic settings such as the workplace. Such tests become vital learning tools, and can be carried out at various times over a school or college year (or longer). Students need not necessarily achieve standards at the same time, so evidence may be gathered over time using a variety of methods and in various contexts.

Reliability issues are approached not by objective scoring methods but by the use of professional judgment and the use of exemplars. Assessors

become "judges", weighing evidence and assessing how well performances reflect defined standards.

3.1 Why competency-based assessment?

A competency-based approach to assessment is highly appropriate to vocational education and training:

- to ensure that teaching and assessment serve the required outcomes, rather than being based, for example, on courses undertaken or time served
- to facilitate the granting of credit for competency acquired elsewhere
- to help students clearly understand what is expected of them if they are to succeed in the course
- to inform potential employers what a particular qualification means.

That said, there are a number of unresolved issues about both the underlying assumptions of competency-based assessment and its implementation. Consideration of these goes beyond a book such as this, but they are well covered in a recent book on the subject by Alison Wolf (1994). One particular problem of implementation—the applicability of competence-based education to large-scale systems—is covered in section 5. Another relates to the difficulty of specifying the outcomes required in general education (as opposed to technical areas), because of the difficulty in contextualising general objectives.

3.2 How much evidence?

As Wolf (1994) points out, we normally make judgments on rather small amounts of evidence. We also, in vocational education, use assessments to make far ranging predictions about a person's ability to satisfy the needs of a trade or profession in the future. To use Wolf's example, "if

we could follow a doctor around for the whole of his working life, and not only observe surgeries and home visits but also follow up on patients, we would be in a very good position to tell whether or not he or she was any good." But, of course, assessors are not in a position to do this, and they have to make do with rather coarse approximations. Just how closely any approximation assesses what needs to be tested indicates its use as an assessment tool.

Deciding how much evidence, and of what type, needs to be gathered is a delicate balancing act. To borrow an expression from the legal profession, assessors must weigh evidence which will enable them to judge "on the balance of probabilities" or (where competence is of critical importance) "beyond reasonable doubt" that a person is competent.

To put it another way, all decisions about assessment methods involve a consideration of risk: although it may be rarely stated in these terms, teachers and assessors establish procedures and modes of assessment so that the risk of an incorrect assessment is acceptably low. Leaving aside the use of assessment to promote learning, this normally takes the form of making an assessment only as precise as it needs to be for the stage of the course, the level of qualification, the importance of this assessment to the aims of the qualification or the requirements of a professional area, and the risk of incompetence to the community.

Which of these "standards of proof" will be required will depend on the accuracy required and the amount of "risk" that is acceptable. Higher standards of proof will in most instances be more expensive, since assessors will need to gather more evidence, or gather evidence in different contexts. Thus in addition to assessment principles, teachers and assessors need to consider practical issues in designing a competency based assessment strategy.

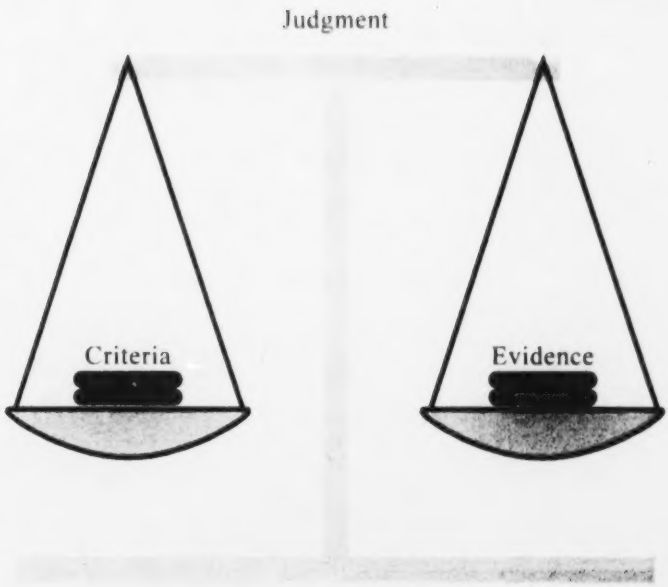

Figure 1. The weighing of evidence against criteria in order to make a judgment
(from Hagar et al. 1994)

3.3 Principles of competency-based assessment

The basic principles of assessment are that it should be valid, reliable, flexible and fair.

The four principles of assessment

Validity

Assessments are valid when they assess what they claim to assess. This is achieved when:

- assessors are fully aware of what is to be assessed (against some appropriate criterion or defined learning outcome)
- evidence is collected from tasks that are clearly related to what is to be assessed
- there is enough sampling of different evidence to demonstrate that the performance criterion has been met.

Reliability

Assessments are reliable when they are applied and interpreted consistently from student to student, and from one context to another.

Flexibility

Assessments are flexible when they are successfully adapted to a range of training modes and the different needs of different learners.

Fairness

Assessments are fair when they do not disadvantage particular learners—for example, when all learners understand what is expected of them and what form an assessment will take.

(adapted from Hagar et al. 1994)

Under a competency-based assessment system, assessors make judgments, based on evidence gathered from a variety of sources, about whether an individual meets a standard or a set of criteria. The idea of competency standards is essentially a development of criterion referenced assessment which evolved in North America, with the

addition of a focus on the importance of assessment of *performance*, and its application particularly to vocational and professional education.

Competence cannot be observed directly, but it can be inferred from performance. Thus, we need to think about the sorts of performances which will enable us to gather evidence of sufficient quantity and quality to make sound judgments about an individual's competence. Such judgments cannot be absolute.

There are three major principles that, if followed, will help assessors to make sound judgments about competence:

Use assessment methods that are most capable of assessing competence in an integrated manner.

"Competence" includes knowledge, understanding, problem solving, technical skills, attitudes, and ethics. Integrated methods assess a number of elements of competence and all their performance criteria simultaneously. For example, observations of classroom performance could be used to assess a school teacher for, amongst other things, classroom management skills, knowledge of the subject matter being taught, ethical principles, lesson planning, within the one assessment event.

Nevertheless, it is dangerous to infer too much from observation of performance since professionals find themselves in a very wide variety of contexts. Thus there almost inevitably will be occasions in which knowledge will need to be tested independently of performance.

Select methods that are most direct and relevant to what is being assessed

For example, in the training of auto mechanics, to assess diagnostic competence assessors must observe the steps in diagnoses—a performance assessment—whereas the interpretation of circuit diagrams or a set of instructions can be assessed through a written

test. To assess overall competence, both these methods and a number of others will need to be used. Reasons for directness in assessment are: to ensure the learning efforts of learners are properly directed; so the criteria for judgment will be clear to learners; and from recent work in cognitive psychology suggesting that problem solving is context-specific, because problem-solvers rely on specific rather than general strategies.

There is a widespread belief that the use of a performance assessment is a *sufficient* condition for better assessment. Even if the use of such types of assessment helps teachers think more about how to get all students to formulate and solve problems—that is, to encourage real learning—such a change to assessment is not sufficient to increase student achievement overall.

Use a broad base of evidence for the inference of competence

A mix of methods should be used for providing evidence from which to infer competence, as the narrower the base of evidence, the less generalisable it is to the performance of other tasks. For instance, performance on paper-and-pencil tests in any profession will probably be too narrow a base for assessing occupational competence.

As can be seen, the competency-based approach to assessment emphasises performance, a greater variety of evidence than is traditional, and direct assessment methods (as previously outlined in Table 1).

For large vocational education systems, an obvious problem with this approach is its practicability. For example, it may be harder to replicate more desirable assessment methods than, say, written tests—especially those based on recall of facts. And it is easier to demonstrate that the latter are "fair" or impartial—although, of course, they may not be valid! This is important where the credibility of qualifications has yet to be established, and decisions will often result from the need to balance external credibility against validity.

3.4 Steps in developing a competency-based assessment strategy—a case study

A number of steps need to be followed in the development of a competency-based assessment strategy:

- group elements of competence and performance criteria in some way. (This is likely to lead to the linking of elements and associated criteria *across* units of competence.)
- examine the assessment methods available concentrating on those which have the greatest potential for integrated and direct assessment.
- assess the methods in the light of practical issues such as the time and money available.
- draw up a table of specification linking the method to the competencies that each will assess.

The way in which this has been done is shown below for the assessment of some pilot competencies. The table shows the four major categories of competence that were identified, and for each category indicates the methods of assessment that are to be used. It is worth noting that while the emphasis is on direct methods of assessment, a variety of methods is used.

Assessment decisions such as those listed in the table will be based on what is ultimately subjective professional judgment, but it is judgment which is based on experience. Thus judging performance will, in the end, be a matter of professional judgment based on considered decisions about the amount and kind of evidence required. This is a long way from the hoped-for simplicity of some of the advocates of the competency movement, but it is a considerable improvement on traditional assessments which rely on deep inferences about the relationship between knowledge and professional practice. However, because there is

Some methods of assessment for pilot competencies
(from Hagar, Athanasou and Gonczi 1994)

Categories	Methods of assessment
Observable technical performance	Six-month simulator check (minimum 1500 hours) Six-month route check Licence renewal Six month asymmetric check (i.e. engine failure) 90-day requirements for non-directional beacon VHF omni-directional radio range and landing system 90-day requirements for take-offs and landing both day/night 5 hours instrument flight time Medical check In-flight assessment by check captain or simulator
Problem solving	Simulator In flight problems assessed by check captain
Knowledge	Aircraft systems—oral questioning Civil Aviation examinations (meteorology, flight planning, air legislation)
Attitudes Work habits	Oral questioning on company policy and requirements

less transparent agreement in this approach about the nature of competent performance, there will be a greater need to consider reliability issues than there would be in a task oriented model. Many of these issues can be tackled through training and moderation programs.

The final step in developing an assessment strategy will encompass management issues such as assessor training (linking this to the previous step since this is a way of safeguarding reliability of judgment) developing handbooks for assessors and assesses, review procedures and so on.

3.5 Further reading

Atkins, M J, Beattie, J and Dockrell, W B (1993) *Assessment issues in higher education.* Sheffield, UK: Employment Department

> This is one of few books currently available which examines assessment issues from a competency-based perspective. Although written for higher education, it also addresses issues of vocational and professional preparation.

Hagar, P, Gonczi, A and Athanasou, J (1994) General issues about assessment of competence. *Assessment and Evaluation in Higher Education 19* (1) 3-16

> Although written for higher education, this paper covers aspects relevant to vocational education and is an ideal introduction to competency-based assessment.

Wolf, A. (1994) *Competency-based assessment.* Milton Keynes, U.K.: Open University Press.

> A comprehensive survey of the principles and practice of competence-based assessment, including a useful critique of its advantages and shortcomings.

4. RECOGNITION OF PRIOR LEARNING

Recognition of Prior Learning (RPL), also called Accreditation of Prior Learning (APL) or Prior Learning Assessment (PLA), is a process to accredit learning gained or skills acquired outside formal educational institutions. A person might have learnt, for example, certain skills through voluntary community work, or through informal training within a company, or through non-credentialled courses. RPL emphasises what a person knows or can do, rather than how or when he or she learnt it.

RPL is usually carried out by assessing what a person has learnt, or can do, against the standards required by the relevant course. It is *not*, however, a procedure for giving credit for life experience.

4.1 Why should assessment take account of prior learning?

Vocational education providers should take account of prior learning because it is sound educational practice: students may be able to progress more quickly, and they will not be forced to "learn" things they already know. The use of RPL for admission also has the potential to benefit women students, and those from disadvantaged socioeconomic backgrounds, who may be able to demonstrate ability even though they may lack formal qualifications. There are financial benefits as well: both students and the nation may save money on unnecessary tuition, and the nation potentially gains a member of the workforce more quickly.

In a broader context, discussions focussed on RPL have also served in some countries as a bridge between companies and vocational education providers, leading to more effective and better-recognised training.

4.2 Issues in connection with prior learning

To carry out RPL successfully, it is necessary to clarify a number of issues about learning—both knowledge and skills—in order to identify the assessment principles which will guide successful practice. Some

questions that help clarify the necessary issues (taken from Cohen et al. 1994) are:

- What exactly is this grade or pass for?
- How critical is the context in which the learning has been acquired?
- What elements of the 'hidden curriculum' are included in the assessment process?
- Could this learning have been acquired outside a formal learning situation?
- Are there circumstances in which effective learning can only be gained within a formal educational structure?
- What sort of external learning is valued and rewarded?
- How is learning assessed and by whom?

Note that notions of "risk" and "precision" are much more significant in RPL assessment than in normal assessment, because of the variety of different ways in which learning can be demonstrated within a flexible RPL framework, and the fact that RPL is normally a one-off assessment, in which the assessor makes a decision without a knowledge of the person's performance throughout a course.

4.3 Methods in use

Assessors can use a variety of methods to see whether a person has the skills, understanding and knowledge needed to pass a course. The following table (again from Cohen et al. 1994) lists the possibilities, with examples in each case. Although it refers specifically to RPL, the suggested assessment methods are as relevant to assessment in general.

Assessment methods

Assessment methods	Purposes and examples
Interviews	To clarify issues raised in documentary evidence presented and/or to review scope and depth of learning. May be particularly useful in areas where judgment and values are important. (May be structured, with applicants given questions prior to interview, or relatively unstructured, with no specific preparation required.) e.g. Qualified draftsperson who has performed duties requiring additional skills, and is seeking advanced standing in architecture degree, is asked to explain the legal basis for certain building codes.
Debate	To confirm capacity to sustain a considered argument demonstrating adequate knowledge of the subject. e.g. Union representative on national union seeking recognition for negotiation skills in law degree is asked to prepare a topic for formal debate or take part in a mock trial.
Presentation	To check ability to present information in a way appropriate to subject and audience. e.g. Law clerk seeking advanced standing for contracts in law degree is asked to explain precedents existing in case law on a particular issue. e.g. Laboratory assistant with six years experience with ICI and seeking RPL for a laboratory component in first year chemistry, explains the theoretical basis for an experiment. e.g. Part-time technical teacher for eight years in business has provided videotapes of an introductory lecture and evaluation reports on workshop conducted in last six months seeks credit for the practicum in Bachelor of Teaching. Applicant to write/present a lecture for novices on [specific complex subject matter].

Performance testing	To test applications of theory in a structured context in correct or safe manner (in a simulated environment or in the workshop or laboratory or in the workplace). e.g. Applicant uses specific laboratory equipment to conduct an experiment and explain the findings in writing. e.g. Applicant is asked to explain the rationale for a sequence of tasks undertaken using a range of complex equipment.
Examination	To test concepts and basic skills and application using practical examples. (May be similar to end of subject examination or a separate challenge test.) e.g. Financial accountant who has worked with the same large company for twelve years since joining as a fixed assets register clerk, seeks credit for introductory financial accounting.
Oral Examination	To check deep understanding of complex issues and ability to explain in simple terms. (For post-graduate students this might take the form of a viva.) e.g. Multilingual teacher seeks credit in a language degree by means of oral examination.
Essay	To check quality and standard of academic writing and use of references, ability to develop a coherent argument, and to confirm extent, understanding and transferability of knowledge and critical evaluation of the ideas. (Essays may be similar in scope or format to formal academic essays set for enrolled students.) e.g. Applicant has read widely and done three Continuing Education Units in European History and seeks RPL for part of an Arts course.

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Examples of work done or performed or designed	To check quality of work, relevance to credit sought and authenticity of production. (Often combined with interview or oral test.) e.g. Applicant has worked in video production and has many examples of videos produced. Seeks credit towards video design and production units in visual communications degree. e.g. Applicant has developed design for a prototype of an energy-efficient machine, and seeks non-specific credit in an unrelated course. e.g. Applicant seeks credit towards writing subjects in communications degree on basis of published works and experience as editor of technical journal and other freelance work.
Special projects	May be used to meet a variety of purposes — to add greater currency to knowledge or skills, to top up learning, to extend scope of prior learning. e.g. Experienced computer programmer is familiar with two of the three components in the course curriculum. Applicant agrees to cover third method in current work project and provide evidence in two weeks.
Book review	To ensure currency and analysis of appropriate literature is at a satisfactory level. (This is often used where the applicant has creditable learning but appears to have missed a major specific reference or viewpoint which has been a prerequisite for enrolled students and is basic to future studies in the area.) e.g. Nurse of many years experience in both nursing and health administration seeks credit towards health sciences degree. Through RPL, all clinical and most of the introductory theory subjects are credited at high levels. A current major text is required reading and needs to be read and critically reviewed.

Annotated literature review	To illustrate the range of reading done by applicant and ensure appropriate coverage to fulfil subject requirements. (This is particularly suitable for post-graduate assessment.) e.g. Applicant seeking credit for several Agricultural Science subjects worked in the field with an R and D team for three years and has been keeping a record of reading in this area for a number of years in relation to problems emerging during agricultural field visits. Mainly a summary of content, but occasional comments compare different approaches and indicate reflection about the way the subject is presented and its usefulness to the agricultural problem under consideration. Applicant is asked to add to this using a more formal approach.
Reports, critiques, articles	To indicate level of knowledge and assess analytical and writing skills and issues involved in current debate. e.g. Applicant from the public sector presents a range of reports written about the subject over the past few years. Applicant may be given a current government report and asked to critique from a lobby group's particular viewpoint. e.g. Animal carer who has been recognised for researching a specific malady in native animals seeks credit for an introductory subject in veterinary science.
Portfolio	To validate applicant's learning by providing a collection of materials which reflect prior learning and achievements. Will include own work, reflections on own practice and indirect evidence from others who are qualified to comment. The portfolio will identify relevant connections between learning and the specified or unspecified credit sought. e.g. Applicant has worked in voluntary capacity as president of local community child care group, secretary of local parents' committee for the high school and music director for musical productions of two local high schools. Seeks to have this credited towards Degree in Teacher Education. Applicant also has private music students learning piano, clarinet and flute achieving well in the Conservatorium examinations. Applicant seeks advice on what might be credited.

4.4 The RPL process

The process of assessing a student's application entails a number of stages: preliminary information and advice, preparation of an application, assessment and accreditation, post-assessment guidance, and recording RPL results. For further details on each of these steps, see Cohen et al. (1994) and Simosko (1991).

It is also necessary to clarify exactly on what basis credit will be given, and to identify the most cost-effective way of conducting assessments in a particular subject area. That said, however, RPL may prove to be beneficial in a number of educational settings.

4.5 Further reading

Simosko, S (1991) Accreditation of prior learning: a practical guide for professionals. London: Kogan Page.

Whitaker, U (1989) Assessing learning: standards, principles and procedures. Philadelphia: Council for Adult and Experiential Learning.

> These two books serve as an introduction to Recognition of Prior Learning (also called accreditation of prior learning or prior learning assessment), and explain in greater detail the processes involved.

Cohen, R, Flowers, R, McDonald, R and Schaafsma, H (1994) Learning from experience counts. Part II (pp 1-55) of Recognition of prior learning in Australian universities. Higher Education Division Occasional Papers Series. Canberra: Australian Government Publishing Service.
(also available as: Cohen, R, Flowers, R, McDonald, R and Schaafsma, H (1993) Learning from experience counts. Sydney: University of Technology, Sydney)

This report covers the underlying principles of the recognition of prior learning (including why it is beneficial) and issues that need to be addressed in implementing a system of recognition of prior learning. Although written for universities, the ideas in it can be readily applied to any education sector.

5. ASSESSMENT ACROSS MANY INSTITUTIONS

Much of the discussion in this book has assumed that although assessment policies and procedures may be system-wide, conduct of assessment is the responsibility of individual teachers in schools and colleges. This is not always the case. Although the previous sections have focussed on processes of assessment, this section is devoted to larger-scale assessment as this occurs in many countries.

5.1 Learning, competence and recognition

The previous sections have espoused a new approach to assessment in vocational education: one in which there is a much stronger acknowledgment than previously of the connection between assessment and learning, in which the emphasis is on demonstrated competence rather than on comparisons with others, and in which students' skills and knowledge can be recognised, regardless of how or where they were attained.

When large numbers of students across many institutions need to be assessed, however, there is a difficulty in adopting these ideas. With regard to the connection between assessment and learning, whilst the form of assessment can have a very powerful effect on the way students choose to learn, there is none of the interchange between teacher and student which makes formative assessment such a powerful aid to learning. With regard to assessment and competence, there are many desirable aspects of assessment of competence which are impractical to implement across many institutions, with our current state of understanding. As Elley (1994) has pointed out in his paper focussing on assessment across institutions,

> "There is an inevitable tension here between the freedom of the teacher to select material which is appropriate for a specific group of students, and the uniformity of topics and testing conditions necessary"

That is, there is a problem in measuring students' competence in the abstract and removed from the context in which it is to be applied, within a structure that normally requires a fixed time limit for all and a particular selection of areas to be tested.

Despite these comments, however, large-scale assessment procedures are often carried out in many countries, where they are seen as the best way (at present) of ensuring uniformity of standards. For this reason this topic has been included in this monograph. It refers to a situation in which assessment is both summative and "external", and the assessment system may be operated by an authority which administers and controls a regional or national system for educational or training institutions. Formative assessment, on the other hand, is inevitably left to the colleges and other training institutions, where is occurs as part of the teaching program.

External assessment authorities are likely to have highly organised procedures for processing assessments and detailed operational systems which can cope with a wide range of eventualities, some of which may only rarely occur. Such authorities often respond to and reflect national policies on education and training and may be accountable to government.

External assessment systems provide information to the principal stakeholders: students, teachers and those who make decisions about selecting for employment, further or higher education or training.

5.2 Goals and policies

External assessment within large systems will generally be carried out by an external assessment board—normally an agency completely independent of all the colleges in which students are enrolled. The goal

of such boards is to provide valid and reliable, high-quality public examinations, tests and related services at low cost to educational, training, industrial and commercial organisations within their national jurisdiction.

Within the system of assessment there will be those components which are administered externally by such a board and marked by examiners trained and controlled by it. These will generally be unseen written examinations or tests. Other assessment components might be set centrally but assessed by the candidates' or students' own teachers or trainers (generally coursework and practical and oral assessments). External assessment systems throughout the world normally use a combination of examiner-marked and teacher-marked assessments.

Authorities responsible for administering external assessments operate in the public domain, are under close scrutiny, and are usually monitored and regulated by government. Whether the organisation is a company or a government agency, it will have to operate on a cost-effective basis with technically sound assessments which make realistic demands on the organisation's own administration and that of the examination centres it serves. The assessments should meet the needs of all types of students seeking qualifications at any given level and meet the needs of a nation's social, economic and political imperatives. The administration system should ensure that candidates' results are accurate and fair and are issued on time.

Administrative rules relating to a variety of situations will be needed—for example, whether any candidates will be refused admission, prohibited combinations of subjects, acceptance of late entries, policy on refund of fees for withdrawals, transfer of candidates between centres, special arrangements for candidates with special needs, and arrangements for candidates who are absent from part of an assessment due to illness.

5.3 The administration of external examinations—a case study

Most external assessment boards throughout the world operate similar systems. The rest of this chapter describes a generic external assessment system applicable to assessments of all types. The sequence follows the order of the external assessment process.

The assessment sequence

The Examining Board

A board is a government-approved body which conducts assessments for the award of certificates of vocational and technical and general education to students in secondary and further education. The board publishes its syllabuses (programs or course of study or training) well in advance of assessment sessions to enable the thorough preparation of candidates taking the associated assessments. In addition, supporting resource and guidance material is provided where appropriate. Detailed information about the conduct of the assessment process are published and distributed to centres.

Registration of Centres

Schools, colleges and other institutions which wish to enter candidates for the board's assessments must be registered with the board as an examination centre. In order for a centre to achieve approval the board asks the centre to provide details of the type of institution, the age range of students, full details of the security arrangements for the storage of question papers, details of facilities available for practical assessments, and the names and addresses and status of referees. Before approval a trained inspector working on behalf of the board will visit the centre.

Responsibilities of Centres

The Head of the school, college or other organisation undertakes responsibility for:

- appointing an examinations officer to conduct the assessments at the centre and correspond with the board, including all correspondence on behalf of candidates
- providing secure arrangements for the receipt and checking of the contents of question-paper parcels, and the absolute security of question papers (including the provision of a lockable safe, safe-room or steel cabinet in a secure room not accessible to unauthorised persons) in the centre
- providing fully adequate facilities for all candidates entered
- the proper conduct of the assessments
- appointing a teacher in each subject who is responsible for co-ordinating and standardising the marking of the teacher-assessed components.

The board may make unannounced visits to centres at any time to look at the administration of teacher-assessed components, written examinations and the general administration, as well as security arrangements for the storage of confidential material.

Examination entries

Centres are asked to indicate their intended method of entry and their estimated number of candidates for each subject. Only those centres returning an Estimate of Entry Form will automatically receive entry material.

Main Entries may be made in one of four ways: on broadsheet Entry Forms, by submitting a computer printout, by submitting a disk plus hard copy, or by electronic mail or electronic data interchange.

Entry documentation and checking procedures

The Statement of Entry is a key document as it provides a crucial check of all the details of each candidate. This document lists the components being taken by an individual candidate, the examination dates (usually for timed written examinations and other tests where the timing is fixed) and the candidate's surname, forenames, sex and date of birth. The personal details are those which will eventually be printed on the Statement of Results and Certificate unless notification of change is received at the board. One copy of the Statement of Entry is supplied for the centre and one for the candidate.

Candidates are expected to bring their Statements of Entry to every session of the assessment which they attend.

The board sends entry amendment forms to centres with the Statements of Entry for centres to indicate any personal details or subject errors which may be found on the Statements of Entry.

Teacher-assessed work

Within an external assessment system, there is provision for the teacher/tutor to assess examination work. Usually this will be in the form of written coursework, projects, the assessment of practical skills (such as craft work, engineering, catering) and performance skills (such as music, sport, film-making). The board supplies regulations and guidance information on all matters relating to teacher assessed work. These include:

- timescale for the production of work
- authentication of candidates' own work
- degree of teacher guidance permitted
- arrangements for standardising teachers' marking
- external moderation of marking
- malpractice
- completing marks sheets to the board.

The board expects the same level of rigour with respect to security and fairness as required for written examinations.

Regulatory systems

The regulation of external assessment occurs at three levels, which are described below:

Regulation of examination centres by the board

The administration of external assessments is a complex process. The board needs to obtain accurate data about candidates and to adhere to tight deadlines. Examination centres need precise and specific information about what to do and when to do it, for the guidance of all involved in the process: invigilators, teachers preparing candidates for assessment, and candidates.

The person responsible for conducting assessments at each centre—the examinations officer—also needs detailed, specific information addressing routine administrative matters and special cases, including malpractice or lost assessment work.

Self-regulation of the board through its own procedures and guidance documents using a 'Code of Practice'

Increasingly, organisations which offer goods and services on a commercial basis have produced their own self-regulating codes of conduct. Some of these are International Standards, such as ISO 9000. It is good practice for assessment boards to declare what their policies, principles and practices are in a formal, publicly available document. Such a document establishes what should happen and the means by which it is undertaken. In England and Wales, the assessment boards for both general and technical and vocational education have produced public statements setting out how they will conduct their business.

Regulation by external authorities

Although practice varies from country to country, typically governments monitor external assessment boards either directly or through an appointed authority. Regulatory authorities are empowered to approve syllabuses and assessment instruments, to monitor the assessment process through the inspection of procedure documents and through direct observation of the assessment process. They are responsible for retrospective scrutiny of assessments and conducting comparability studies which investigate standards over time, between assessment boards and between subjects. External assessment authorities can visit examination centres to assess the conduct of the assessment authorities and visit the assessment boards themselves. They may issue confidential reports to the assessment boards as well as publishing to the general public.

5.4 General issues

Accuracy of data

At the stage when the Entry Form is complete all information relating to a candidate should be accurately given. The data given on this form is entered onto a computer database either electronically or manually. Any changes to the data after this stage are dealt with by Board staff. Correcting errors manually at any of the processing stages of the automated process is expensive.

Deadlines

Because each assessment session has to work to precise deadlines, it is essential that all those involved in the process know what tasks have to be completed and by what date: board staff, external printers, teachers, examiners, and local and national postal services.

Security

Security is a critical aspect of the administration. There must be safeguards against information leaks through all stages, from the writing of question papers and their marking schemes through printing, distribution using postal or other systems and storage in the institutions themselves, through to the actual conduct of the assessment. Techniques for achieving high levels of security vary according to the culture and values of the nation involved.

Postal distribution

In some countries, the distribution service (for example by using the postal system) is a perfectly secure method of despatching sensitive materials to examination centres. In other countries, other methods (such as direct delivery by assessment board staff) are used. Techniques must be developed for ensuring that once candidates' work is assessed, the information (i.e. the marks or grades) is not lost in the distribution system. (For example, sending into the board the candidates' assessed work in a separate despatch to the examiners' mark sheets.)

Quality control

To do justice to candidates, examination question papers and assignments (together with the criteria for assessing them) must be of high quality, examiners must be selected, trained to mark to the same standard, and checks of their marking must be undertaken at various stages in the assessment process. All decision making needs to be checked and double-checked, particularly decisions on adjusting examiners' marks, scaling assessment components or levels of achievement.

Appeals upon result

Most assessment systems allow candidates or teachers to appeal against a given result. The Board can provide services such as

a recheck of the adding up of the marks, reassessment of the candidates' work, or a written report on the candidate's achievement. In at least one country, New Zealand, the marked scripts are now returned to candidates directly from the examiner. This open system has resulted in fewer challenges to results.

5.5 Further reading

Eckstein, M A and Noah, H J (1993) Secondary School Examinations: International Perspectives on Policies and Practice. Newhaven: Yale University Press.

This is a review of eight examination systems: the United States, China, Japan, Germany, England and Wales, France, Sweden and the former Soviet Union. Comparisons are made in the format, content and style of the examination questions as well as how each country measures academic success and controls the examinations, how the examinations affect the educational system and how the results affect students' subsequent social status and employment opportunities.

The School Curriculum and Assessment Authority (1994) Code of Practice for GCE A and AS Examinations. Reference P16/94/068. London Central Office of Information SCCU JO6-3134; and Code of Practice for GCSE Examinations. Reference KS4/94/046.

These booklets have been written to promote quality and consistency in the assessment process across all assessment boards offering GCE Advanced (A) and Advanced Supplementary (AS) examinations and GCSE. They are designed to ensure that grading standards are constant in each subject across different assessment boards, between different syllabuses in the same subject, and from year to year.

They cover the setting of question papers and marking schemes, standardisation of marking, coursework assessment and

moderation, grading and awarding, and assessment boards' relationship with centres.

GCE Boards and GCSE Examining Groups (1994). Instructions for the Conduct of Examinations (for use in all examinations operated by GCE Boards and GCSE Examining Groups). Reference EXWP/ICE/9/93. (Copies available from Director: Testing and Training Services, The Associated Examining Board,, Stag Hill House, Guildford, Surrey GU2 5XJ, England)

This document provides guidance to schools and colleges on administering public examinations, and covers all stages of taking external examinations.

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